Missouri Department of Natural Resources

Total Maximum Daily Load Information Sheet

Coldwater Creek

Water Body Segment at a Glance:

County: St. Louis
Nearby Cities: Black Jack
Length of impaired segment: 5.5 miles
Length of impairment within segment: 4.0 miles (D.O.)
5.5 miles (Bac., Cl)
Pollutant 1: Low Dissolved Oxygen
Source 1: No Source Identified
Pollutants 2,3: Bacteria, Chloride
Source 2,3: Urban Nonpoint Sources

Water Body ID: 1706


State Map Showing Location of Watershed

Scheduled for TMDL development: 2011 for bacteria; 2014 for chloride; 2016 for low D.O.

Description of the Problem

Designated Beneficial uses of Coldwater Creek

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life
- Protection of Human Health (Fish Consumption)
- Whole Body Contact Recreation – Category B
- Industrial

Uses that are impaired

- Protection of Warm Water Aquatic Life (chloride and low dissolved oxygen)
- Whole Body Contact Recreation – Category B (bacteria)

Standards that apply

- Missouri's Water Quality Standards at 10 CSR 20-7.031(4)(C) state that the *E.coli* bacteria count shall not exceed 126 colonies per 100 milliliters of water (126 col/100 mL) for Category A and 206 col/100 mL for Category B waters. This count is the geometric mean during the recreational season (April 1- October 31) in waters designated for whole body contact recreation.

- The criteria for chloride are found in 10 CSR 20-7.031 Table A. The chronic criterion is 230 milligrams per liter (mg/L or parts per million) and the acute criterion is 860 mg/L.
- Also in Table A, the criterion for dissolved oxygen in streams is a minimum of 5 mg/L.

Background information and water quality data
Coldwater Creek is an urban stream. It flows mostly east through northern St. Louis to the Missouri River. It passes through or near the communities of Florissant, Black Jack and Spanish Lake. The evidence for the impairments is based on data collected by the U.S. Geological Survey, or USGS, from 2001-07.

Water quality conditions in Coldwater Creek are not protective of aquatic life. Dissolved oxygen is important as many aquatic organisms require high levels of oxygen to survive. For dissolved oxygen, if more that 10 percent of measurements in a water body fail to meet the water quality criterion that water body is judged to be impaired. In the case of Coldwater Creek, 13 of 55 samples (23.6 percent) did not meet the water quality criterion (Figure 1). While no source has been identified for the low dissolved oxygen, it is likely caused by urban nonpoint source, like the chloride and bacteria. Storm water (urban nonpoint source runoff) is known to wash many types of pollutants from the watershed into its receiving water body.

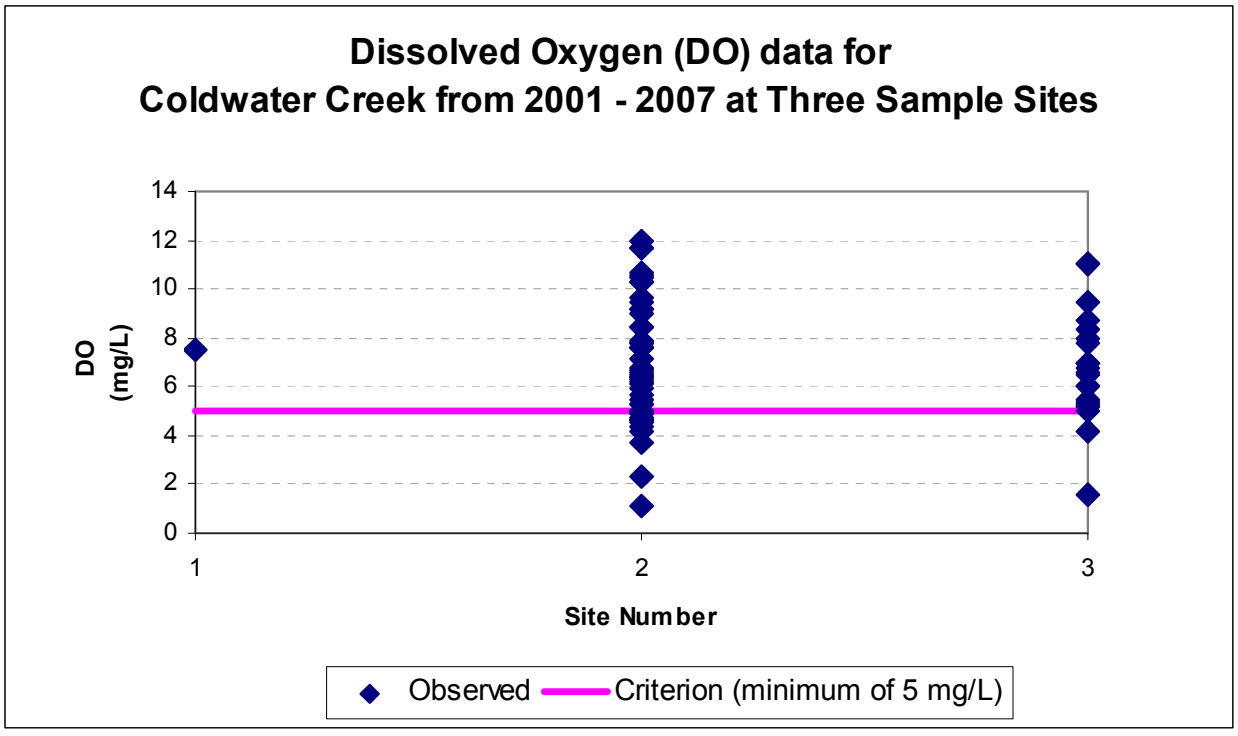


Figure 1.

The Listing Methodology stipulates that only one exceedance of the chloride criteria in the last three years of available data is necessary to constitute an impairment. The USGS data contain two samples where the chronic standard of 230 mg/L is exceeded in Coldwater Creek in that timeframe (Figure 2).

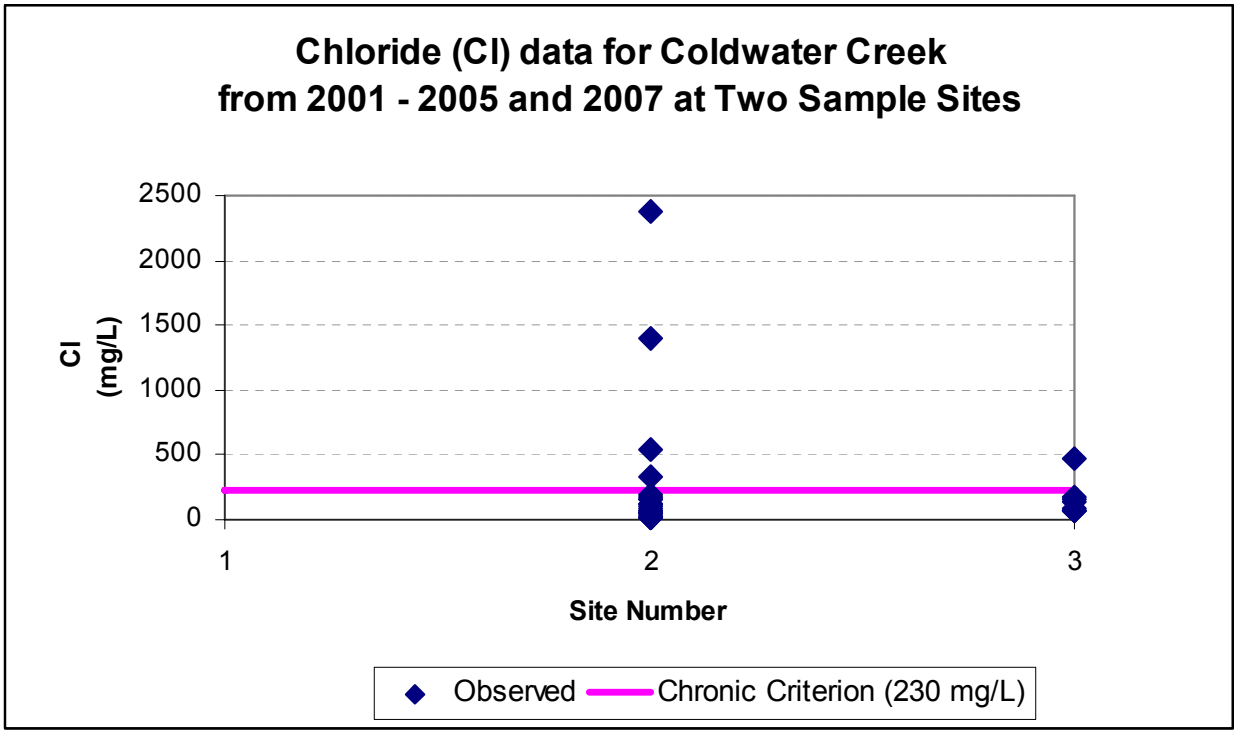


Figure 2.

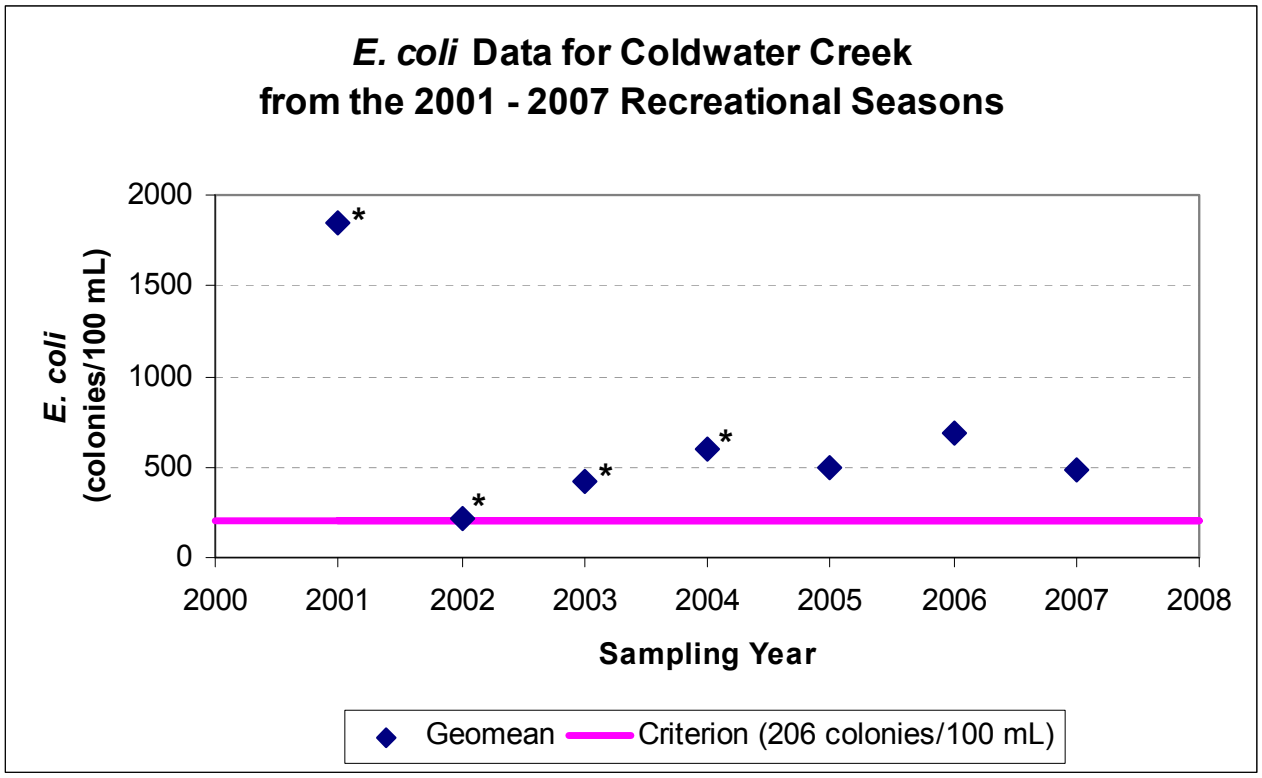
Excessive amounts of fecal bacteria in surface water used for recreation are an indication of an increased risk of pathogen-induced illness to humans. Infections due to pathogen-contaminated waters include gastrointestinal, respiratory, eye, ear, nose, throat and skin diseases. *E. coli*, are bacteria found in the intestines of warm blooded animals and are used as indicators of the risk of waterborne disease from pathogenic (disease causing) bacteria or viruses. Most *E. coli* strains are harmless, but some can cause serious illness in humans and are occasionally responsible for product recalls. The harmless strains are part of the normal flora of the intestines, and can benefit their hosts by preventing the establishment of pathogenic bacteria within the intestine[1,2]. Missouri's bacteria criteria are based on specific levels of risk of acute gastrointestinal illness. The levels of risk correlating to these criteria are no more than eight illnesses per 1,000 swimmers in fresh water.

Coldwater Creek is designated as Category B for the whole body contact recreation use, which means it has places deep enough for total immersion (i.e., swimming), but they may be on private lands or inaccessible to the public. The USGS bacteria data were gathered in Coldwater Creek from 2001-2007. The listing methodology states that, to be considered not impaired, a water body must meet the water quality criterion in each of the last three years of available data and that the geometric mean must consist of at least five data points within the recreational season. In Coldwater Creek, the geomean exceeded the criterion of 206 col/100 mL for Category B during the recreational season in all of the last three years for which there is available data (Figure 3). Please note that in the years 2001-2004, even though the geomean exceeded the criterion, they were based

[1] Hudault S, Guignot J, Servin AL (July 2001). "*Escherichia coli* strains colonising the gastrointestinal tract protect germfree mice against *Salmonella typhimurium* infection". *Gut* **49** (1): 47–55

[2] Reid G, Howard J, Gan BS (September 2001). "Can bacterial interference prevent infection?". *Trends Microbiol.* **9** (9): 424–8.

on only three or four data points and so cannot be use to assess impairment. In addition, those years are outside the allotted time frame of the most recent three years of available data.

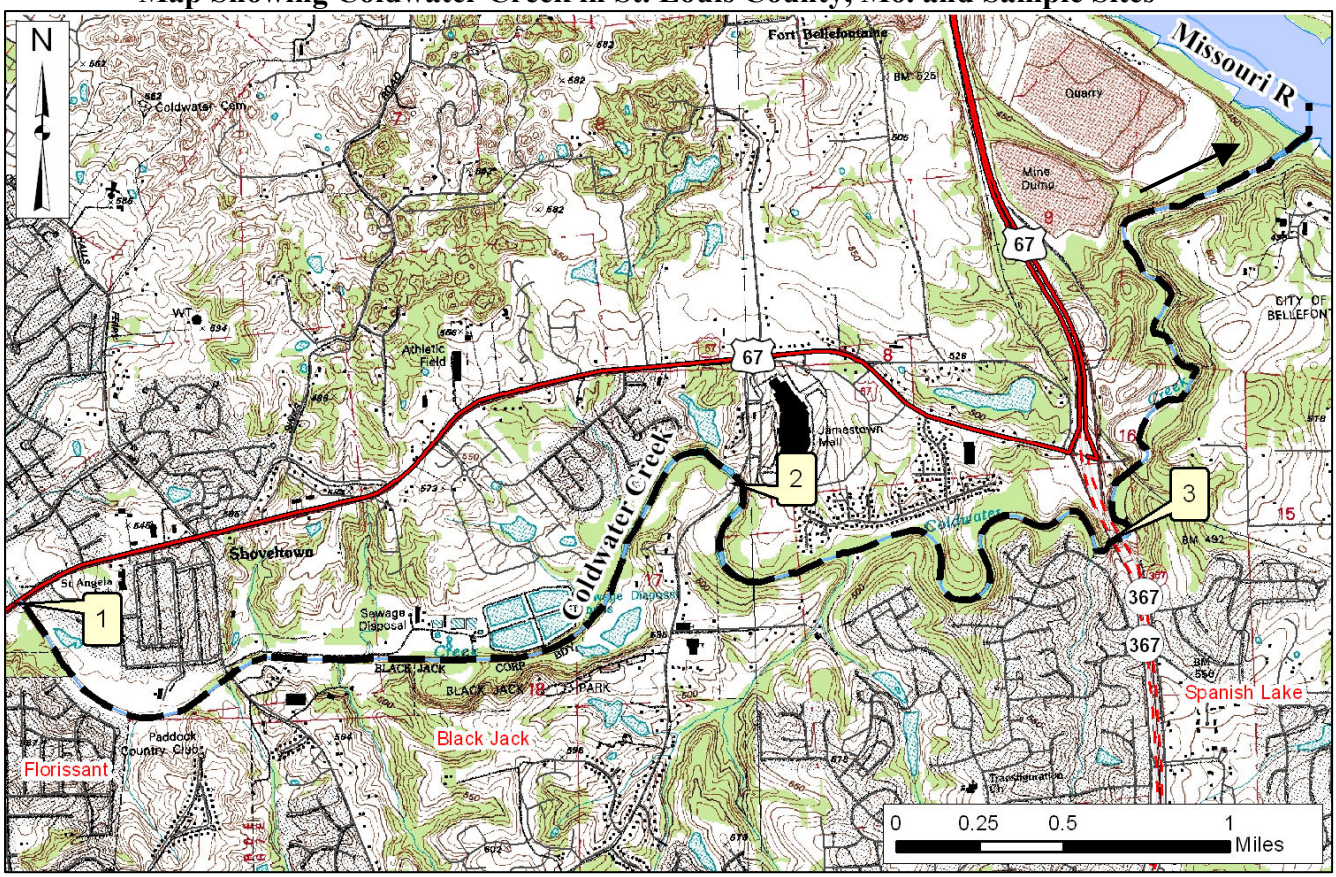


* Geomean calculated using fewer than five (5) samples.

Figure 3.

There is a map of Coldwater Creek on the following page showing the impaired segment and the sampling sites.

Map Showing Coldwater Creek in St. Louis County, Mo. and Sample Sites



Sample Sites
1 – Coldwater Creek at Lindbergh Blvd
2 – Coldwater Creek at Jamestown Road
3 – Coldwater Creek at State Highway 367

For more information call or write:
Missouri Department of Natural Resources
Water Protection Program
P.O. Box 176, Jefferson City, MO 65102-0176
1-800-361-4827 or 573-751-1300 office
573-522-9920 fax
Program Home Page: dnr.mo.gov/env/wpp/index.htm

NOTE:
The final TMDLs developed for Coldwater Creek will use the most recent available data.